Docket No.: 248442US0

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF: GROUP: 1711

Toshiya SAGISAKA, et al.

SERIAL NO: 10/777,095 EXAMINER: TRUONG

FILED: February 13, 2004

FOR: NEW ARYL AMINE POLYMER, THIN FILM TRANSISTOR USING THE NEW ARYL AMINE POLYMER, AND METHOD OF MANUFACTURING THE THIN FILM TRANSISTOR

DECLARATION UNDER 37 C.F.R. 1.132

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

Sir:

Now comes _____ who deposes and states that:

1. I am a graduate of _____ and received my _____ degree in the year _____.

2. I have been employed by _____ for _____ years as a _____ in the field of _____.

3. The following experiments were carried out by me or under my direct supervision and control, in order to show the improvements obtained in mobility and on/off ratio when manufacturing a transistor using an end-capped compound as required by the present invention compared to a non-end-capped compound such as those disclosed in the prior art cited by the Examiner.

A polymer solution was evaluated for spincoating, drying and transistor characteristics. A first transistor was manufactured using Polymer 1 (from Example 1 of the present specification), where the end of the polymer is end-capped with a phenyl group as shown in Example 1 of the present application. Polymer 1 had a weight average molecular weight of 109,100 and a number average molecular weight of 27,100.

A second transistor was manufactured using a second polymer having the same repeat unit, but without the end-capping phenyl group present. This second polymer was prepared using the same procedure as in Example 1 of the present specification, except that benzyl phosphonate diethyl and benzaldehyde were not added. The second polymer had a weight average molecular weight of 114,700 and a number average molecular weight of 31,900.

The first transistor and second transistor were each prepared in accordance with the procedure set forth in Example 43, with the only difference being that an atmosphere controlled glove-box was used having an atmosphere of Ar gas.

The mobility and on/off ratio for each transistor were measured in accordance with the procedures set forth in the present specification. The transistor made from the end-capped polymer of the present invention gave a mobility of 2.2×10^{-3} and an on/off ratio of 4.2×10^{4}. However, the second transistor made from the non-end-capped polymer gave a mobility of 1.4×10^{-3} and an on/off ratio of 2.3×10^{3}, each of which are significantly lower than the values obtained with the end-capped polymer. In fact, the mobility and on/off ratio of the transistor prepared with the end-capped polymer of the present invention were improved by factors of 1.6 and 18 times, respectively, when compared to the transistor formed from the non-end-capped polymer. This is important, since the polymers disclosed in the various references cited by the Examiner do not disclose end-capping of the polymers and only show non-end-capped polymers being used. The end-capping provides a significant difference in ultimate properties of the transistors being formed.

4. The undersigned petitioner declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

5. Further deponent saith not.

_____
Signature

_____
Date

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